

Abstract of the Disclosure

INJECTION OF FUEL VAPOR AND AIR MIXTURE INTO AN ENGINE  
CYLINDER

One strategy for reducing undesirable emissions from internal combustion engines relates to finding ways to better mix fuel and air prior to combustion. One such method is commonly referred to as homogenous charge compression ignition (HCCI); however, that strategy is problematic in both controlling ignition timing and avoiding overstressing the engine at higher speeds and loads. The present invention addresses these issues by mixing air and fuel vapor within an injector instead of within the engine cylinder. The air/fuel mixture is then injected into the engine cylinder at some desired timing and over some desired duration. Such a strategy permits for lower emissions due to better mixing of air and fuel, while also permitting control over some aspects of combustion timing and duration not apparently possible with a conventional HCCI strategy. The present invention is generally applicable to all internal combustion engines, but especially applicable to diesel engines.